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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,734	09/26/2003	Hsiung-Kuang Tsai	Q77679	6756

23373 7590 01/10/2005

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EXAMINER	
STULTZ, JESSICA T	

ART UNIT	PAPER NUMBER
2873	

DATE MAILED: 01/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/670,734	TSAI, HSIUNG-KUANG	
	Examiner	Art Unit	
	Jessica T Stultz	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miles US 6,650,455 (herein referred to as Miles '455) in view of Miles 6,674,562 (herein referred to as Miles '455).

Regarding claim 1, Miles '455 discloses a color changeable pixel (Column 6, lines 37-67 and Column 9, lines 3-55, wherein an array of the pixels "400" are shown in Figure 4A and a single color changeable pixel is shown in Figure 5A), comprising: a first plate (Column 9, lines 3-55, wherein the first plate is mirror "508", Figures 5A and 5B); an operating plate (Column 9, lines 3-55, wherein the operating plate is film "504" and electrode "502", Figures 5A and 5B), wherein the operating plate is settled in parallel with the first plate (Shown in Figures 5A and 5B); a second plate (Column 9, lines 3-55, wherein the second plate is membrane/mirror "506", Figures 5A and 5B), the second plate settled between the first plate and the operating plate in parallel (Shown in Figures 5A and 5B, wherein the cavity is "505"); wherein a cavity is formed between the first plate and the second plate (Shown in Figures 5A and 5B, wherein the cavity is "505", between the first plate "508" and the second plate "506"), and an incident light from one side of the first plate is modulated and a reflected light of only specific frequency is reflected by second plate (Column 9, line 3-55, wherein the structure reflects certain

frequencies of light), and the second plate shifts by a voltage added on the operating plate to change the distance of the cavity, thereby changing the frequency of the reflected light (Column 9, lines 3-55, wherein the change in length of the cavity "505", i.e. vertical movement of membrane mirror "506", is determined by voltage applied to the electrode "502", which changes the optical reflective properties of the structure), but does not specifically disclose at least one first post located between the operating plate and the second plate; at least one second post located between the first plate and the second plate, wherein the second plate shifts along the first and second posts. Miles '562 teaches of a pixel with movable plates including a first plate, a second plate and an operating plate (Column 7, lines 38-67, wherein the first plate is "300", the second plate is "302", and the operating plate is "304", Figures 3A-C), specifically including at least a first post located between the operating plate and the second plate (Column 7, lines 38-67, wherein the first post is one of the posts "306", Figures 3A-C); at least a second post located between the first plate and the second plate (Column 7, lines 38-67, wherein the second post is another of the posts "306", Figures 3A-C), wherein the second plate shifts along the first and second posts for the purpose of providing a supporting frame for the thin film and provide mechanical integrity of the device (Column 7, lines 38-67, wherein the membrane "302" moves along the posts "306" and the frame is used as a support for the thin metallic films). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the pixel of Miles '455 to further include at least one first post located between the operating plate and the second plate; at least one second post located between the first plate and the second plate, wherein the second plate shifts along the first and second posts. Miles '562 teaches of a pixel with movable plates

including a first plate, a second plate and an operating plate, specifically including at least a first post located between the operating plate and the second plate; at least a second post located between the first plate and the second plate, wherein the second plate shifts along the first and second posts for the purpose of providing a supporting frame for the thin film and provide mechanical integrity of the device.

Regarding claims 2-3, Miles '455 and Miles '562 disclose and teach of a pixel as shown above and Miles '455 further discloses that the first plate comprises: a transparent conductive substrate (Column 9, lines 3-55, wherein the mirror "508" is located on semi-transparent, i.e. at least partly absorbing, superstructure "510", Figures 5A and 5B); an absorption layer; and a dielectric layer (Column 10, lines 6-51, wherein the substrate is covered by a thin film absorber stack "704", make of a dielectric layer, conductive layer, and insulator layer, Figures 7A and 7B).

Regarding claim 4, Miles '455 and Miles '562 disclose teach a pixel as disclosed above and Miles '562 further teaches that the dielectric layer is made of silicon oxide, silicon nitride or metal oxide for the purpose of providing good mechanical strength and tether in the pixel (Column 9, lines 25-64, wherein the dielectric material is silicon oxide, aluminum oxide or silicon nitride). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the pixel of Miles '455 to further include a dielectric layer made of silicon nitride and a substrate made of ITO since Miles '562 further teaches that the dielectric layer is made of silicon oxide, silicon nitride or metal oxide for the purpose of to provide good mechanical strength and tether in the pixel.

Regarding claim 5, Miles '455 and Miles '562 disclose and teach of a pixel as shown above and Miles '455 further discloses that the absorption layer is made from metal (Column 9, lines 3-55, wherein the mirror "508" is made of chromium, Figures 5A and 5B).

Regarding claim 7, Miles '455 and Miles '562 disclose and teach of a pixel as shown above and Miles '455 further discloses that the first and second plates are metal mirrors (Column 9, lines 3-55, wherein the first plate "508" is a chromium mirror and the second plate "506" is an aluminum mirror, Figures 5A and 5B).

Regarding claim 8, Miles '455 and Miles '562 disclose and teach of a pixel as shown above and Miles '455 further discloses that the second plate is a deformable plate (Column 9, lines 3-55, wherein the membrane mirror "506" is deformable, Figures 5A and 5B).

Regarding claim 9, Miles '455 and Miles '562 disclose and teach of a pixel as shown above and Miles '455 further discloses that the second plate is a moveable plate (Column 9, lines 3-65, wherein the membrane mirror "506" is movable and wherein the mirror "608" is moveable, Figures 5A, 5B, 6A, and 6B).

Regarding claim 10, Miles '455 and Miles '562 disclose and teach of a pixel as shown above and Miles '455 further discloses that the second plate at least comprises a dense material (Column 9, lines 3-55, wherein the membrane mirror "506" is made of thick aluminum, i.e. a dense material, Figure 5A and 5B) or semi-transparent (Column 10, lines 13-51, wherein the membranes "702" is made of semi-transparent aluminum, Figures 7A and 7B).

Regarding claim 11, Miles '455 and Miles '562 disclose and teach of a pixel as shown above and Miles '455 further discloses that the semi-transparent material is a thin metal (Column 10, lines 13-51, wherein the membranes "702" is made of thin metal films, Figures 7A and 7B).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miles '455 in view of Miles '562 and further in view of Huibers.

Regarding claim 6, Miles '455 and Miles '562 disclose and teach a pixel as disclosed above, but do not specifically disclose that the substrate is ITO or IZO. Huibers teaches of a pixel cell (Column 6, line 66-Column 7, line 5, wherein the pixel cells are shown in Figures 2A-F) wherein a layer of ITO is added to the substrate for the purpose of providing a transparent conductive substrate to move the mirrors toward the top substrate (Column 17, lines 5-17). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the pixel of Miles '455 and Miles '562 to further include a substrate made of ITO since Huibers discloses a pixel cell wherein a layer of ITO is added to the substrate for the purpose of providing a transparent conductive substrate to move the mirrors toward the top substrate.

Response to Arguments

Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection as shown above.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica T Stultz whose telephone number is (571) 272-2339. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jessica Stultz
Patent Examiner
AU 2873
January 3, 2005

JORDAN SCHWARTZ
PRIMARY EXAMINER